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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/810,603	03/19/2001	Takayuki Kurata	Q62420	8802

7590 07/23/2003

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EXAMINER	
DEJESUS, LYDIA M	

ART UNIT	PAPER NUMBER
2859	

DATE MAILED: 07/23/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/810,603	KURATA, TAKAYUKI	
	Examiner	Art Unit	
	Lydia M. De Jesús	2859	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondenc address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 July 2003* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-10,12,13 and 15-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *12,15 and 16* is/are allowed.

6)☒ Claim(s) *1,7,9,10,13,17,19 and 20* is/are rejected.

7)☒ Claim(s) *2-6,8 and 18* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *19 March 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Response to Amendment

1. The indicated allowability of claims 1, 7, 9, 10, 13, 17 and 19-20 is withdrawn in view of the newly discovered reference(s) to Miyazaki and Caretta et al.. Rejections based on the newly cited reference(s) follow.

Moreover, prosecution of the present application has been reopened in view of the newly cited references and the amendment submitted on July 3, 2003 has been entered. The finality of the previous Office action is hereby withdrawn.

Specification

2. The disclosure is objected to because of the following informalities: On various instances in the disclosure it appears that the term "tread" has been misspelled to read instead --thread--.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1, 7, 9, 13, 17 and 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Williams [U.S. Patent 3,807,226] in view of Miyazaki [U.S. Patent 6,082,424].

Williams discloses a tire fault detecting apparatus comprising: a tire support, shown in Figure 1, a road surface [24], means for driving the road surface (see col. 3 lines 24-26), and

means [25] for measuring, without contact, the temperature of the tire. Williams further discloses a means [33+34] for inputting a length of the tread surface part and for correcting a measured temperature of the tread surface part based on a length of a tire contact surface (see lines 8-14 of column 5). It is further noted that the apparatus disclosed by Williams is monitoring the tire tread surface (see lines 28-32 of column 3) and Williams further teaches that other regions of the tire can be tested with said apparatus (see lines 14-18 and 27-36 of column 5).

The apparatus disclosed by Williams will perform, during its normal operation, the method recited in claims 1,7, 9, and 17, except for the step of forecasting tire tread wear on the tire based on the increase in temperature of the tread surface part of the tire or based on the temperature of the tread surface part after increasing the temperature of the tire.

However, Williams does teach that the force applied to the tire is sufficient to deform and cause wear of the tread of the tire (see lines 27-28 of column 3); that heat generated by histeresis in response to the deformation of the tire eventually produces an elevated, steady state temperature within the tire; and further that the average level of the signal increases when a fault in the tire passes near the sensor [25]. Miyazaki teaches that when the ground contact pressure of a tire becomes too high at a particular region i.e., near the edge of the tire, the heat generation is increased and a rubber defect is likely to occur in said region, which may lead to uneven wear (see lines 1-5 of column 5).

Hence, it follows that once a defect has been identified by the tire fault detecting apparatus disclosed by Williams, one of ordinary skill in the art at the time the invention was made would consider that said defect will further result in an uneven wear of the tire for the region corresponding to the location of the fault, as suggested by Miyazaki. Therefore, it would

have been obvious to one of ordinary skill in the art a the time the invention was made to further add to the apparatus disclosed by Williams means, such as a computer or processor, for forecasting tire tread wear based on the increase in temperature of the tread surface part of the tire, and to add the step of forecasting tire tread wear on the tire based on said increase of temperature of the tread surface part, as taught by Miyazaki, in order to predict tire failure.

5. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Williams in view of Miyazaki as applied to claims 1,7, 9, 13, 17 and 19-20 above, and further in view of Caretta et al. [U.S. Patent 6,540,858 B1, hereinafter Caretta].

Williams and Miyazaki together disclose an apparatus and method as claimed, as stated above in paragraph 4, but lack a thermography machine as the radiant thermometer.

However, Caretta teaches that it is very well known in the art to use thermographic images of a tire tread to compare with a comparison tire during performance tests.

Therefore, it would have obvious to one of ordinary skill in the art at the time the invention was made to replace the non-contact radiant thermometer in the apparatus of the combination of Williams and Miyazaki for a thermography machine, as suggested by Caretta, since both are well known infrared radiation detector configurations and since interpretation of the data in a two dimensional display of the tire tread surface, such as a thermograph, will improve the accuracy of forecasting of wear on said tread surface.

Allowable Subject Matter

6. Claim 12, 15 and 16 are allowed.

7. Claims 2-6, 8, and 18 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Shimizu et al. discloses a method for estimating a tire wear life.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lydia M. De Jesús whose telephone number is (703) 306-5982. The examiner can normally be reached on 7:30 to 4:00 p.m., Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Diego F.F. Gutierrez can be reached on (703) 308-3875. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 305-3431 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1782.

Diego F.F. Gutierrez
Supervisory Patent Examiner
Technology Center 2800

LDJ
July 17, 2003